

CLAIMS:

1. (Original) A photopolymerizable composition which comprises at least one photopolymerizable monomer, at least one photopolymerization initiator, and at least one long chain alkylamine having (i) one or two methyl or ethyl groups and (ii) at least one alkyl group having a chain length of at least 8 carbon atoms.
2. (Original) A composition as in Claim 1 wherein said composition is devoid of any component having one or more free carboxyl groups.
3. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-2 wherein said photopolymerizable monomer is a mixture of at least two photopolymerizable monomers.
4. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-3 wherein said photopolymerization initiator is one or more Type I photoinitiators.
5. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-3 wherein said photopolymerization initiator is one or more Type II photoinitiators.
6. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-3 wherein said amine is one or more trialkyl amines each having a total of 10 to about 24 carbon atoms in the molecule, and wherein two of the alkyl groups are methyl or ethyl, or one of each, and the remaining alkyl group contains at least 8 carbon atoms.
7. (Original) A composition as in Claim 6 wherein said two of the alkyl groups are both methyl groups and said remaining alkyl group is a primary alkyl group containing in the range of 8 to about 22 carbon atoms.
8. (Original) A composition as in Claim 6 wherein said one or more trialkylamines are one or more of dodecyldimethylamine, tetradecyldimethylamine, hexadecyldimethylamine, and octadecyldimethylamine.
9. (Currently Amended) A composition as in ~~any of Claims~~ claim 1-3 wherein said amine is one or more trialkyl amines each having a total of 17 to about 38 carbon atoms in the molecule, and wherein one of the alkyl groups is methyl or ethyl, and the other two alkyl groups are the same or different, and each is a primary alkyl group.
10. (Original) A composition as in Claim 9 wherein said one of the alkyl groups is methyl and said other two alkyl groups are primary alkyl groups containing, independently, in the range of 8 to about 22 carbon atoms.

11. (Original) A composition as in Claim 10 wherein said one or more trialkylamines are didecylmethylamine or dodecylmethylamine, or both.

12. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-11 further comprising at least one pigment, dye, or other color-producing substance whereby the composition is adapted for forming permanent printed, decorative, or pictorial matter on a substrate when applied thereto and photopolymerization in place.

13. (Currently Amended) A photopolymerized composition or article formed from a composition as in ~~any of Claims~~ Claim 1-12.

14. (Original) A photopolymerized composition or article as in Claim 13 wherein said photopolymerized composition or article is an unwashed composition or article.

15. (Original) A photopolymerized composition or article as in Claim 13 wherein said photopolymerized composition or article is in the form of a thin coating on paper or thin paperboard stock.

16. (Original) A photopolymerized composition or article as in Claim 15 wherein said photopolymerized composition or article is an unwashed composition or article.

17. (Currently Amended) A method of forming a photopolymerized composition or article, which method comprises exposing a photopolymerizable composition as in ~~any of Claims~~ Claim 1-12 to sufficient radiation to photopolymerize said photopolymerizable composition.

18. (Original) A method as in Claim 17 wherein the photopolymerization is effected using coherent radiation.

19. (Original) A method as in Claim 17 wherein the photopolymerization is effected using non-coherent radiation.

20. (Currently Amended) A method as in ~~any of Claims~~ Claim 17-19 wherein said photopolymerizable composition is photopolymerized as a thin coating on a travelling web.

21. (Currently Amended) A method as in ~~any of Claims~~ Claim 17-19 wherein said photopolymerizable composition is photopolymerized as an a coating or laminate on a substrate.

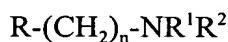
22. (Currently Amended) A method as in ~~any of Claims~~ Claim 17-19 wherein said photopolymerizable composition is photopolymerized as an article or shape while in a mold.

23. (Currently Amended) A composition as in ~~any of Claims~~ Claim 1-12 further comprising at least one short chain tertiary amino compound containing at least two

electronegative atoms in the molecule, at least one of which is a tertiary nitrogen atom and another of which is an oxygen atom or a tertiary nitrogen atom, and wherein the electronegative atoms are bonded only to short chain alkyl groups or to short chain alkylene groups, and wherein the compound has a total of at least 4 abstractable hydrogen atoms in positions alpha to at least some of the electronegative atoms in the compound.

24. (Original) A composition as in Claim 23 wherein said compound has a total of at least 6 abstractable hydrogen atoms in positions alpha to at least some of the electronegative atoms in the compound.

25. (Original) A composition as in Claim 23 wherein said compound is represented by the formula:



where

A) R is (i) a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; (ii) an N-alkylpiperazinyl group in which the alkyl is a C₁₋₃ primary alkyl group, or (iii) a morpholino group;

R¹ is a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group;

R² is (i) a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; (ii) an alkyleneamino group in which alkylene is a C₁₋₃ alkylene group and the amino is a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; (iii) an alkyleneaminoalkyleneamino group in which each alkylene is, independently, a C₁₋₃ alkylene group, the amino between the alkynes is a C₁₋₃ primary alkylamino group, and the other amino is a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; (iv) an alkyleneoxyalkyleneamino group in which each alkylene is, independently, a C₁₋₃ alkylene group, and the amino is a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; or (v) an alkyleneoxyalkyleneoxyalkyleneamino group in which each alkylene is, independently, a C₁₋₃ alkylene group, and the amino is a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group;

or where

B) R is (i) a dialkylamino group in which each alkyl is, independently, a C₁₋₃ primary alkyl group; (ii) an N-alkylpiperazinyl group in which the alkyl is a C₁₋₃ primary alkyl group, or (iii) a morpholino group; and R¹ and R² taken together is (i) an N-alkylpiperazinyl group in which the alkyl is a C₁₋₃ primary alkyl group, or (ii) a morpholino group.

26. (Currently Amended) A photopolymerized composition or article formed from a composition as in ~~any of Claims~~ Claim 23-25.

27. (Original) A composition as in Claim 23 wherein said compound consists of one or more tertiary amino groups, one or more ether oxygen atoms, and/or one or two hydroxyl groups linked to each other by C₁₋₃ alkylene groups, such that there are at least two tertiary amino groups or at least one tertiary amino group and at least one ether oxygen atom or at least one hydroxyl group linked together in this fashion, and such that the compound has a total of at least 4 abstractable hydrogen atoms in positions alpha to at least some of the electronegative atoms in the compound, and wherein said one or more tertiary amino groups when not part of a cycloaliphatic ring system are di(C₁₋₃ alkyl)amino or mono(C₁₋₃ alkyl)amino group(s) depending on whether the tertiary amino group is a terminal group or an internal group.

28. (Original) A composition as in Claim 27 wherein said compound has at least 6 said abstractable hydrogen atoms.

29. (Original) A composition as in Claim 23 wherein said compound is selected from the group consisting of N,N,N'-trialkyl-1,2-ethanediamine, N,N,N',N'-tetraalkyl-1,2-ethanediamine, N,N,N'-trialkyl-1,3-propanediamine, N,N,N',N'-tetraalkyl-1,3-propanediamine, N-[2-(dialkylamino)ethyl]-N,N',N'-trialkyl-1,2-ethanediamine, N-[3-(dialkylamino)propyl]-N,N',N'-trialkyl-1,3-propanediamine, 1,4-dialkylpiperazine, 2,2'-oxybis[N,N-dialkylethanamine], 3,3'-oxybis[N,N-dialkylpropanamine], 4-[2-(dialkylamino)ethyl]morpholine, 4-[3-(dialkylamino)propyl]morpholine, triethylenediamine, 4,4'-(oxydi-2,1-ethanediyl)bismorpholine, N-hydroxyethylmorpholine, and N-hydroxypropylmorpholine, wherein the alkyl groups in the compounds having alkyl groups are, independently, methyl, ethyl, or propyl.

30. (Original) A composition as in Claim 23 wherein said compound is selected from the group consisting of N,N,N'-trimethyl-1,2-ethanediamine, N,N,N',N'-tetramethyl-1,2-ethanediamine, N,N,N'-trimethyl-1,3-propanediamine, N,N,N',N'-tetramethyl-1,3-propanediamine, N-[2-(dimethylamino)ethyl]-N,N',N'-trimethyl-1,2-ethanediamine, N-[3-

(dimethylamino)propyl]-N,N',N'-trimethyl-1,3-propanediamine, 1,4-dimethylpiperazine, 2,2'-oxybis[N,N-dimethylethanamine], 3,3'-oxybis[N,N-dimethylpropanamine], 4-[2-(dimethylamino)ethyl]morpholine, 4-[3-(dimethylamino)propyl]morpholine, triethylenediamine, 4,4'-(oxydi-2,1-ethanediyl)bismorpholine, N-hydroxyethylmorpholine, and N-hydroxypropylmorpholine.

31. (Original) A composition as in Claim 23 wherein said compound is N-[3-(dimethylamino)propyl]-N,N',N'-trimethyl-1,3-propanediamine and said composition further comprises 2-hydroxy-2-methyl-1-phenylpropane-1-one.

32. (Original) A composition as in Claim 23 wherein said compound is 2,2'-oxybis[N,N-dimethylethanamine] and said composition further comprises 2-hydroxy-2-methyl-1-phenylpropane-1-one.

33. (Original) A composition as in Claim 23 wherein said compound is N,N-dimethyl-4-morpholineethanamine and said composition further comprises 2-hydroxy-2-methyl-1-phenylpropane-1-one.

34. (Original) A composition as in Claim 33 wherein said long chain amine is dodecyldimethylamine.

35. (Original) A method of (A) minimizing blushing, discoloration and premature degradation of a polymer formed by the photopolymerization of a photopolymerizable composition which comprises at least one photopolymerizable monomer, and at least one Type I photopolymerization initiator, or (B) eliminating or minimizing extractables, discoloration, and premature degradation of a film having a thickness of 2 mils or less where said film is formed by the photopolymerization of a photopolymerizable composition which comprises at least one photopolymerizable monomer, and at least one Type II photopolymerization initiator, said method characterized by including in the composition of (A) or of (B) before photopolymerization, at least one long chain alkylamine having (i) one or two methyl or ethyl groups and (ii) at least one alkyl group having a chain length of at least 8 carbon atoms.

36. (Original) A method as in Claim 35 wherein said method is the method of (A).

37. (Original) A method as in Claim 35 wherein said method is the method of (B).

38. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is octyldimethylamine.

39. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is decyldimethylamine.

40. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is dodecyldimethylamine.

41. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is tetradecyldimethylamine.

42. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is hexadecyldimethylamine.

43. (Currently Amended) A method as in ~~any of Claims~~ Claim 35-37 wherein said at least one long chain alkylamine is octadecyldimethylamine.

44. (Currently Amended) A method as in ~~any of Claims~~ 35-37 wherein said at least one long chain alkylamine is didecylmethylamine.